

“PVCNSSK” GOVT. POLYTECHNIC BILASPUR at KALOL
PLANNED THEORY SYLLABUS COVERAGE

PTSC-7.1

GPB		Department: Electrical Engg.		Subject: ELECTRICAL POWER SYSTEM-II		
		Sem. & Branch: 5TH & EE		Duration : 3 Years		
SYLLABUS COVERAGE		Total Periods: Theory: 56				
Sr No	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	9(1-9)	Electrical Power Supply System	1.1 Single line diagram of Electrical Power Supply System 1.2 Advantages of high voltage transmission 1.3 Various systems of electrical power transmission: DC system, 1-phase AC system, 2-phase ac system, 3-phase AC system 1.4 Comparison between AC and DC system for transmission of electrical power	Electrical Power System by JB Gupta, S K Kataria and Sons, New Delhi		
2	10(10-19)	Mechanical Design of Overhead Transmission Line	2.1 Types of line supports, types of conductors, earth wire and their accessories 2.2 Insulator, selection of insulator, string efficiency of suspension type insulator 2.3 ACSR Conductor, Bundled conductors, Transposition of 3-phase line 2.4 Span length, Sag and stress calculation, Stringing chart, Sag template, effects of wind and ice on Sag (numerical)			
3	9(20-28)	Electrical Aspects of Transmission Line	3.1 Choice of working voltage for transmission 3.2 Economic size of line conductor- Kelvin's law 3.3 Inductance of a conductor due to internal flux and external flux			

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4	9(29-37)	Substation and Distribution System	<p>3.4 Inductance of a single phase two-wire line and of three phase line</p> <p>3.5 Capacitance of three phase line, charging current due to capacitance</p> <p>3.6 Skin effect, Ferranti effect, proximity effect in conductors of transmission line</p> <p>3.7 Corona: factor affecting, advantages and disadvantages, corona power losses and methods to reduce the corona</p> <p>4.1 Substation: Indoor and outdoor substations, equipment for substation, auxiliary supply</p> <p>4.2 Distribution Systems: Radial, ring mains and inter-connected distribution system</p> <p>4.3 Comparison of AC and DC distribution system</p>	Electrical Power System by JB Gupta, S K Kataria and Sons, New Delhi		
5	6(38-43)	Underground Distribution System	<p>5.1 Advantages and disadvantages of underground system with respect to overhead system</p> <p>5.2 Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications</p>			
6	8(44-51)	Extra High Voltage AC and DC Transmission System	<p>6.1 Necessity of EHV Transmission</p> <p>6.2 Limitation of EHV-AC Transmission System</p> <p>6.3 Basic Concepts of HVDC System</p> <p>6.4 Limitation of HVDC Transmission</p> <p>6.5 Comparison between EHV-AC and HV-DC Transmission .</p>			
7	5(52-56)	Role of Power Factor in Power System	<p>7.1 Concept of power factor</p> <p>7.2 Causes and effects of low power factor in power system</p> <p>7.3 Methods to improve power factor: Synchronous condenser, Static capacitor bank and VAR Static Compensators</p>			

APPROVED	SIGN HQD/OIC
DATE <u>31/08/2022</u>	